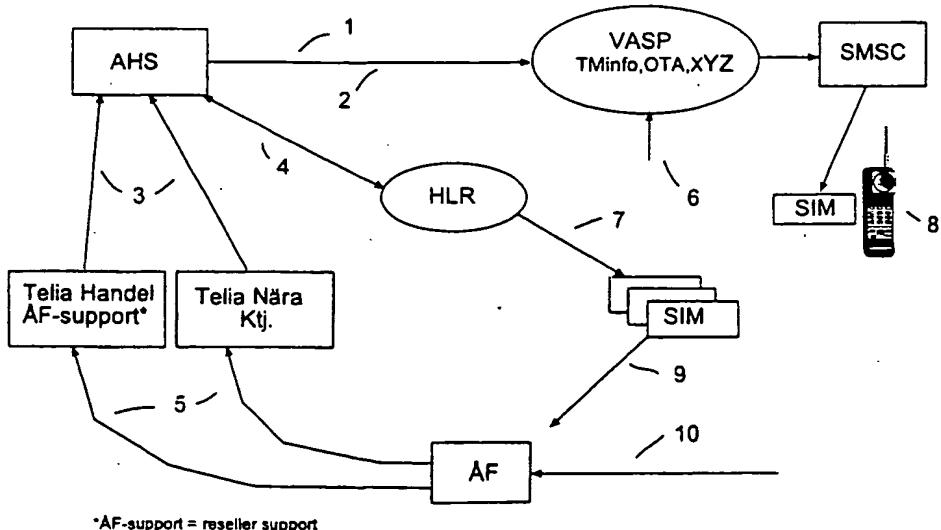


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(54) Title: SIM-FUNCTION



(57) Abstract

The invention relates to a method at a wireless telecommunications system which makes possible an automatic activation respective deactivation of a SIM locking function in a GSM metwork. Before a telecommunication terminal has been distributed to a user, a telephone and a SIM-card are adapted to each other. The in the connection included SIM locking function results in that the user cannot utilize other SIM-cards than those which are in the package when the telephone is delivered to the customer. The invention is characterized by a method which implies that the SIM locking function can be unlocked by means of utilizing SIM toolkit functions and a carrier service, such as SMS or USSD. The unlocking of the SIM locking function is controlled by different criteria such as when the customer has transmitted his/her undersigned agreement to the network operator.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/01086

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04Q 7/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EDOC, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0757502 A2 (NOKIA MOBILE PHONES LTD.), 5 February 1997 (05.02.97), column 2, line 9 - column 3, line 13; column 12, line 6 - line 21	1-2,4-7
Y	--	3
X	WO 9523487 A1 (GTE MOBILE COMMUNICATIONS SERVICE CORPORATION), 31 August 1995 (31.08.95), page 1, line 33 - page 2, line 3; page 2, line 29 - line 33; page 5, line 10 - line 13, page 6, line 23 - line 32, page 8, line 1 - line 8, page 15, line 37 - page 16, line 6	1-2,4-7
Y	--	3

 Further documents are listed in the continuation of Box C. See patent family annex.

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Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/01086

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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X	US 5603084 A (RAYMOND C. HENRY, JR. ET AL), 11 February 1997 (11.02.97), column 2, line 15 - line 37, abstract	1
Y		3
A		2,4-7

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X,P	WO 9722221 A2 (BELLSOUTH CORPORATION), 19 June 1997 (19.06.97), page 5, line 2 - line 22; page 6, line 20 - line 29; page 12, line 19 - line 26, abstract	1-7

A	GB 2287855 A (VODAFONE LIMITED), 27 Sept 1995 (27.09.95), page 5, line 18 - page 6, line 7	1-7

A,P	EP 0796023 A2 (NOKIA MOBILE PHONES LTD.), 17 Sept 1997 (17.09.97), column 4, line 35 - line 37, abstract	1-7

INTERNATIONAL SEARCH REPORT

Information on patent family members

05/10/98

International application No.

PCT/SE 98/01086

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INTERNATIONAL SEARCH REPORT

Information on patent family members

05/10/98

International application No.

PCT/SE 98/01086

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0796023 A2	17/09/97	FI 961154 A	14/09/97

TITLE OF THE INVENTION: SIM-FUNCTION

Field of the invention

5 The present invention relates to a method at a wireless communications network for activation respective deactivation of a locking function in a mobile terminal in said network.

Prior art

10 Before a SIM-card based mobile telephone is distributed for sale, the mobile telephone is adapted to a specific SIM-card. This can be done at the manufacturing place of the telephone, or at a supplier's, best done at the packing of the mobile telephone and the SIM-card.

15 The mobile telephone is equipped with a SIM locking function, which implies that when the customer obtains his/her mobile telephone and his/her SIM-card, the customer can only use the SIM-card/cards which are in the packing. Other SIM-cards consequently cannot be used in the mobile 20 telephone. The unlocking of the SIM locking function is done in such a way that the operator distributes keys for unlocking the mobile telephone. When the SIM locking function is unlocked by means of the key, other SIM-cards can be used in the mobile telephone.

25 One problem with the above mentioned is that it is cumbersome and expensive to distribute keys to every new customer. Another problem is that it is experienced as cumbersome by the customer to have to wait for his/her keys to be able to utilize the mobile telephone to its full 30 extent.

The aim of the present invention consequently is to solve this problem.

Summary of the invention

35 The above mentioned aim is achieved by a method at a wireless telecommunications network for activation

respective deactivation of a locking function in a mobile terminal in the network, at which the activation respective deactivation of the locking function in the mobile terminal is executed by an operator, at any predecided occasion, 5 transferring commands, via a carrier service in the network, to the mobile terminal, which commands activate or deactivate the locking function in the mobile terminal.

By that, the need of keys which shall be distributed to the customer is eliminated. In addition the customer 10 does not need to unlock the terminal himself/herself, because this is attended to by the operator via a carrier service such as SMS or USSD.

Further advantages are that the invention gives 15 possibility to in a supple way handle present subscriptions; protects against reselling and export of present subscriptions with belonging telephone; makes more difficult and reduces the interest of the resellers to sell many subscriptions from different operators to one 20 customer; the telephone will be less attractive to steal in the distribution stage; improves the handling of number and SIM-cards with less wastage as a result.

Further characteristics of the present invention are given in the subclaims.

25 Brief description of the drawing

In the following a detailed description of an embodiment of the present invention is given with reference to the only drawing.

Figure 1 describes schematically the procedure of 30 unlocking the SIM locking function.

1. At registration, activate OTA, SIM-lock, update MSISDN.
2. (The customer X, does agreement exist, open SIM-lock, this is the customer's 35 phone number).
3. Subscr. registered.

4. Subscr. updated automatically.
5. Subscr. is sent via THOL, fax, letter.
6. Function implementation VASP (Value Added Services Platform).
7. Active SIMs.
8. ME must support: SIM-lock, SIM toolkit.
9. AF has active SIMs in shop.
10. Customer wants to buy Reg.Mob.

10 Detailed description of an embodiment of the invention

Distribution security is a new function which combines SIM-lock and SIM-toolkit in a unique way. The function gives operators possibility to protect provision to a greater extent than what is possible today.

15 Before a telephone is distributed, a telephone and a SIM-card is, as has been mentioned above, matched together. This can be done at the factory, or with a supplier. This is best done at packing of the telephone and the SIM-card. The SIM locking function results in that the customer
20 cannot use other SIM-cards than those that were enclosed in the package.

In order to unlock SIM-lock, SIM toolkit functions are used and a carrier service, for instance SMS or USSD. The
25 unlocking can be controlled by different criteria, for instance when the customer has sent in his/her signed agreement. The operator consequently need not distribute any keys to unlock the terminals and minimizes the risks of bad reputation by using SIM-lock.

30 In the following a conceivable scenario of how the unlocking of the SIM locking function can be achieved is given.

When a customer registers a subscription at a reseller's (AF), this registration is sent via THOL, fax, letter to "Telia Handel" reseller support (AF support)
35 alternatively "Telia Nära" customer service (Ktj.), which

in its turn registers the subscription in a support system unit (GSM-AHS).

AHS checks whether the customer has signed a valid subscription agreement between customer and Telia AB. If no 5 subscription agreement has been made, nothing happens. As soon as an agreement has been made (i.e. the customer has undersigned and sent in the subscription agreement) and been registered in AHS, functions are activated in the network and information is transmitted to the customer's 10 mobile telephone which is unlocked, at which other SIM-cards can be used together with the mobile telephone. AHS consequently instructs VASP (Value Added Services Platform) about that the SIM locking function shall be unlocked, at which VASP instructs an SMS-controller (SMSC) to transmit a 15 special message (SMS-special) and SIM-unlocking commands SIM delock MSISDN (Mobile System -ISDN). The mobile telephone which supports SIM lock and SIM toolkit receives SIM unlocking commands, after which the SIM toolkit function unlocks (activates) the mobile telephone so it can 20 be used by other SIM-cards. At the same time the mobile telephone receives a message on its display that the subscription is confirmed, and that the customer is welcome as customer at Telia AB. The customer does not see what has 25 actually happened, but only receives a confirmation that the subscription is registered and a welcome-message.

It should of course be realized that an operator any time can lock (deactivate) the mobile telephone so that it cannot be used by other SIM-cards by transmitting commands which attends to that SIM toolkit locks the mobile 30 telephone.

The above mentioned is only to be regarded as a preferred embodiment and the extent of protection of the invention is only defined by what appears from the following patent claims.

PATENT CLAIMS

1. Method at a wireless communications network for activation, respective deactivation, of a locking function in a mobile terminal belonging to just any customer in said network, characterized in that the activation, respective deactivation, of the locking function in said mobile terminal is executed by an operator, at just any predetermined occasion, transferring commands via a carrier service in said network to said mobile terminal, which commands activate respective deactivate the locking function in said mobile terminal.

2. Method according to patent claim 1, characterized in that said locking function is a SIM locking function.

3. Method according to any of the patent claims 1 or 2, characterized in that said carrier service is SMS or USSD.

4. Method according to any of the patent claims 2 or 3, characterized in that said mobile terminal supports the SIM locking function and the SIM toolkit function, at which said commands attends to that the SIM toolkit function unlocks (activates) said mobile terminal.

5. Method according to patent claim 4, characterized in that the unlocking of the SIM locking function is controlled by different just any criteria.

6. Method according to patent claim 5, characterized in that said operator attends to unlocking of the SIM locking function when he/she receives undersigned agreement from said customer.

7. Method according to any of the previous patent claims, characterized in that said network is a GSM network.

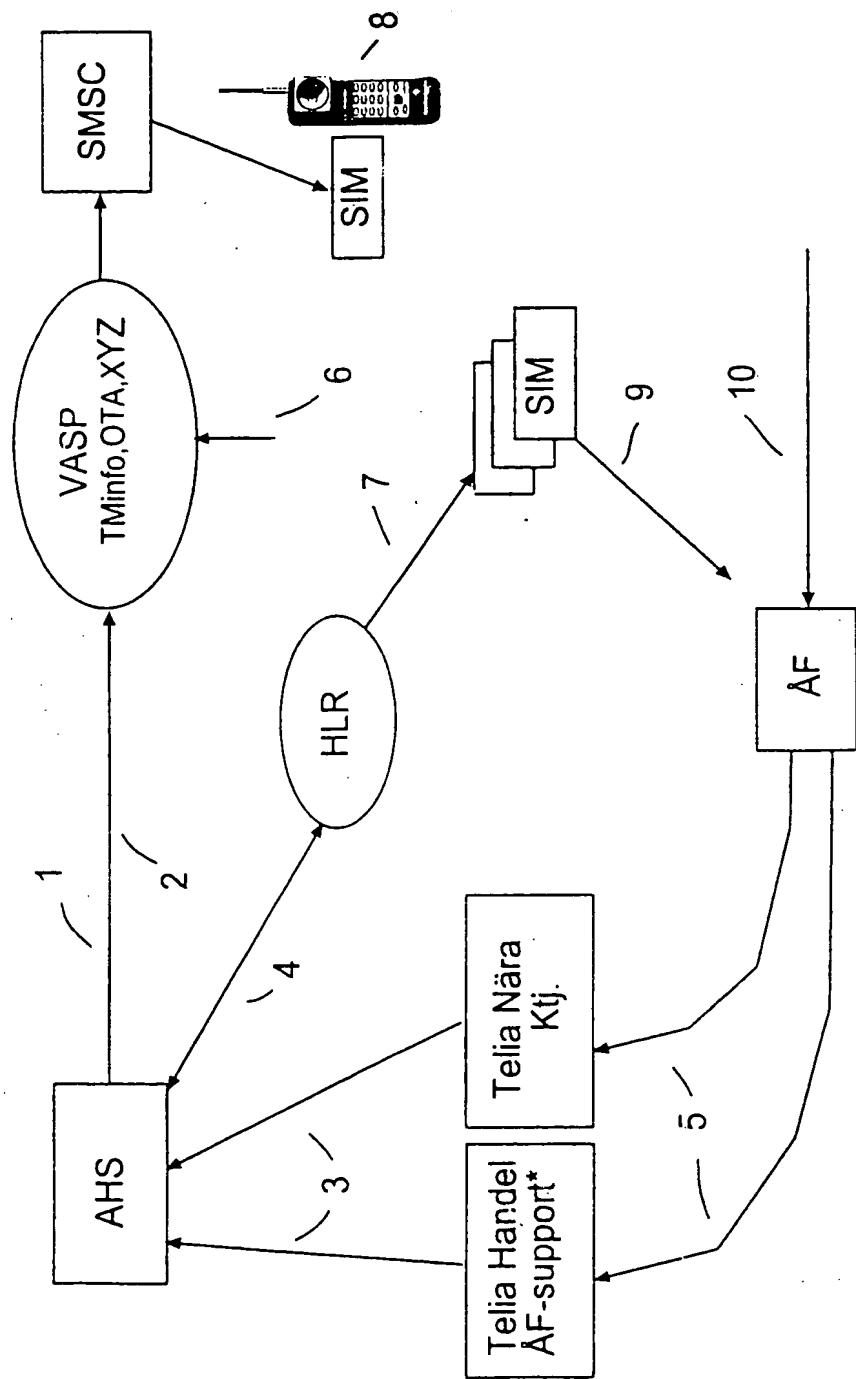


Figure 1

*AF-support = reseller support